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STORM SEWER CATCH BASIN AND FILTER

SUCU/C Field of the Invention

P The invention relates to filters for storm sewer catch basins.

CU/C Description of the Prior Art

5 P Ground water from heavy rains or melted snow is collected in a storm sewer catch basin and ^{flows} ~~flowed~~ into an underground sewer line. The water flows into the basin through openings in a grate on the top of the basin.

10 Water entering a sewer line should be free of solids. Conventional storm sewer filters remove solids from the water before the water flows into the catch basin. These filters are made of a porous material and are located at or above grade level. The filters may be placed horizontally on the top of the grate or may be stood up, vertically in a circle above grade level, surrounding the grate. Water flows freely through the filter and
15 into the catch basin. Solids are captured by the filter. Over time, the solids build up on the filter, impede the free flow of water through the filter, ^{and the collected water floods the area} ~~and flood the area~~ surrounding the storm sewer. Conventional ground storm sewer filters located at or above grade level are readily visible.

20 For the foregoing reasons there is need for a below grade catch basin filter which filters solids from water without impeding

the flow of water through the catch basin and into the sewer and which is easily removed from the catch basin for dumping when filled.

CLV/C Summary of the Invention

5 *P* The invention is a storm sewer catch basin and a removable storm sewer filter. The filter is held in a storm sewer catch basin below grade level between the top of the basin and a grate.

A The filter includes a bag ^{formed from a} of porous geotextile material having inwardly tapered sidewalls and flaps at the top of the bag. The
10 grate rests on the flaps to hold the bag in place in the basin. The ends of the flaps are looped and extend at grade level away from the grate. Openings are spaced along the length of the edges of the looped flaps.

15 Water and solids flow through the openings in the grate and into the catch basin. The water flows into and through the filter bag and out the catch basin. Solids are captured in the bag. The solids accumulate in the bag below grade level and out of sight without impeding the flow of water through the catch basin. When
20 it is necessary to remove the full bag from the catch basin, rods are inserted into the looped flaps, the grate is removed and hooks are secured to the exposed rods ^{at} in the openings to permit lifting of the heavy, filled filter. The filter is dumped and replaced in
A the basin, the rods are removed and the grate is ^{refitted} replaced in the top of the basin to hold the filter in place.

25 Other objects and features of the invention will become apparent as the description proceeds, especially when taken in conjunc-

tion with the accompanying drawings illustrating the invention, of which there are two sheets and one embodiment.

DECLU/C Description of the Drawings

5 Figure 1 is a top view of a filter bag in a catch basin below a grate with filter bag flaps extending away from each side of the basin; and

Figure 2 is a sectional view taken along line 2--2 of Figure 1.

DECLU/C Description of the Preferred Embodiment

10 P Concrete catch basin 12 has an open upper end located at grade level, in-ground sidewalls 14 and floor 16. Concrete storm sewer pipe 18 extends away from one of the sidewalls 14 a distance above floor 16. The sidewalls and floor define chamber 20. A recess or groove 22 extends around the inner edge of the top of the catch basin facing chamber 20. Rectangular grate 24 closes the top of
15 basin 12. The sides of the grate fit in recess 22 in the top of the basin. Ground water flows through the grate and into catch basin chamber 20.

Catch basin filter 26 includes a filter bag 28 in basin
20 chamber 20 and four flaps 30 joining the top of the bag. The flaps extend along the sides of the top of the basin 12 and are sandwiched in recess 22 between the basin and the grate. Flap ends 32 are located outside the sides of the grate. Loops 34 are sewn into the ends of the flaps and extend along the sides of the basin
25 outside the grate. Openings 36 are cut in the ends of the flaps through the loops. As shown in Figure 1, two openings 36 are

provided in each long flap and one opening is provided in each short flap. Lift rods 40 are inserted in the loops 34 and are exposed in openings 36. When it is necessary to lift the bag from the basin, a lift rod is inserted in each flap loop between the open ends of the flap. Lift chains are hooked to the exposed rods at the openings to lift the full filter from the basin.

Filter bag 28 includes four tapered sidewalls 38 each located adjacent one wall of basin 12. The sidewalls are sewn together to form the closed filter bag. Flaps 30 are extensions of the bag sidewalls.

Filter 26 is preferably made from a woven plastic fabric. Narrow strips of a plastic, such as polypropylene, are tightly woven together to form a porous fabric. The fabric permits liquids to flow freely through the filter bag, ^{but} ~~and~~ captures solids. A filter made from plastic fabric, commonly referred to as geotextile, can support a load of solids having a total weight of up to 4,000 pounds.

Bag 28 of filter 26 is located in chamber 20 with flaps 30 extending at grade level away from the catch basin. The tapered bag sidewalls 38 are located away from the walls of chamber 20 and outlet 18 as the bag hangs in the catch basin. As shown in Figure 1, the upper or top portion of each bag sidewall extends along each basin sidewall. The width of the bag sidewalls decreases below the grate so that the bag hangs free of the ^{sidewalls of the} catch basin and does not obstruct filtration even when filled with solids and outwardly bowed as shown by dashed line 42. Grate 24 is fitted in the recess

sandwiching the flaps between the grate and the basin. See Figure 2. The weight of the grate maintains the bag in the chamber.

Ground water and solids flow through the grate and into the filter bag 28 in the catch basin 12. The ground water flows through the bag sidewalls and out of the catch basin through outlet pipe 18. Solids are filtered from the ground water and captured in the bag. Over time, solids accumulate in the bag. The weight of the accumulated solids causes the bag to expand. As the bag expands and becomes full, the walls of the bag do not come in contact with the sidewalls of the ^{catch basin} filtration chamber. Thus, the expanded bag does not block the flow of water through the catch basin filtration chamber or into the pipe 18 and can be easily removed from the chamber.

When the bag is full, lift rods 40 ^{are} inserted in the flaps 36. The grate 24 is removed, hooks are secured to the length of rod exposed in arcuate openings 36 and the bag is lifted from the catch basin. The bag is dumped and replaced in the catch basin. The grate is refitted in recess 22 to hold the empty filter in place and the rods are removed from the flaps.

While I have illustrated and described a preferred embodiment of my invention, it is understood that this is capable of modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.